

November 24, 2010

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Appendix A Summary of Enercon Soil Sampling Results 2006 Release (2006 and 2008 Results)

Appendix B Summary of Enercon Soil Sampling Results 2009 Release



1 Introduction and Site Background

1.1 BACKGROUND

This Off-site Soil Sampling Plan (Sampling Plan) provides a scope of work to assess soil quality on the Torgesen Ranch and Richard Torgesen properties (Subject Properties), which were potentially impacted as a result of two (2) release events (described below) from the Nu-West Industries, Inc.'s (Nu-West) Conda Phosphate Operation (CPO) facility located in Soda Springs, Idaho. Specifically, this investigation focuses on two releases from the CPO facility: one from the Phase I Gyp Stack (F-GYP-1) in 2006 and another from the Old Gyp Stack (F-GYP-0) in 2009. Figure 1 shows the CPO facility and Subject Properties with areas affected by the 2006 and 2009 releases.

Impacted soils along the flow path of the 2006 release were removed during a previous response action by Enercon Services, Inc. (Enercon), a Nu-West consultant (Enercon, October, 2008). However, subsequent post-response soil sampling results from Torgeson's consultant, Bio-West, Inc. (Bio-West), suggest that soils in some portions of the 2006 release areas may contain residual concentrations of constituents of potential interest (Enercon, April, 2008).

Sampling also was conducted in the area of the 2009 release on the Subject Properties. No constituents of potential interest were detected at concentrations above the Target Remediation Goals (TRG) approved by the Idaho Department of Environmental Quality (IDEQ).

In accordance with the June 29, 2010 *Revised Sampling and Analysis Work Plan for Site Characterization* (Work Plan),¹ Nu-West proposes additional sampling to further evaluate soil quality in the areas of the 2006 and 2009 releases.

This Sampling Plan presents the proposed supplemental assessment activities for the Subject Properties. Specifically, the objective of this Sampling Plan is to further evaluate whether certain areas along the flow paths of the 2006 and 2009 gyp stack releases contain constituents of potential interest at concentrations above the screening criteria set forth in the Work Plan—*i.e.*, EPA Preliminary Remediation Goal (PRG) screening levels for residential soil or IDEQ's Risk Evaluation Manual (REM) Initial Default Target Levels (IDTLs) for commercial/industrial direct exposure and for the protection of groundwater and surface water.

This Sampling Plan is an addendum to the Work Plan, including the Quality Assurance Project Plan and Health and Safety Plan, and was prepared consistent with the sample plan design guidance presented in Chapter 9 of EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (also known as SW-846).

1.2 APPROACH

The objective of this Sampling Plan is to further evaluate soil quality along certain areas of the flow paths of the 2006 and 2009 gyp stack releases. The constituents of potential interest are based on previous analyses by prior consultants, and include those

¹ U.S. EPA approved the Work Plan on July 2, 2010.



identified in the Work Plan. Sample locations proposed for this Sampling Plan have been selected based on a review of prior analytical data (nearly 100 samples), and are particularly focused on areas of the Subject Properties where soils were not previously excavated and that may have been impacted by the 2006 and/or 2009 releases.

1.3 RELEASE AREA DESCRIPTION

The Subject Properties—situated in an area at the eastern limit of a broad, north-south trending valley that has been filled by lava flows—are residential and agricultural and currently in barley production. The valley floor is topographically flat with elevations ranging from approximately 6,135 to 6,150 feet above the National Geodetic Vertical Datum (NGVD). A large fault, which is visible as a topographic displacement, is located on the Subject Properties. Boring logs of wells located near this fault zone confirm that the bedrock is highly fractured and weathered.

The regional topography slopes gradually to the south, and the general geology of the region is comprised of alluvial deposits overlying basalt and sandstone bedrock. The surface of the Subject Properties is a thin veneer of unconsolidated alluvial overburden material consisting predominately of silt and silty clay.

The nearest naturally occurring surface water to the Subject Properties is Woodall Spring, which is located approximately one (1) mile northeast. Water flowing in Woodall Spring empties into Woodall Spring Ditch and enters the CPO facility on the north between the Phase I Gyp Stack (West Gyp Stack) and Tailings Pond #4, and exits the CPO facility just west of the Old Gyp Stack. Woodall Spring Ditch widens to the west of the CPO facility as it reaches the adjacent Torgesen Ranch property. In periods of wet weather, surface water flows in Woodall Spring Ditch and ponds on the Subject Properties beginning at the point where the ditch widens. This ponded water infiltrates into the subsurface beneath the Subject Properties.

Releases that resulted in overland flow of water from the CPO facility onto the Subject Properties occurred in 2006 and 2009. Additional details on these releases and subsequent response measures, along with the proposed supplemental sampling strategy to evaluate any residual constituents of potential interest, are described in more detail below.

The remainder of this Sampling Plan is organized as follows:

- Section 2: Summary of the 2006 release, actions undertaken to assess and mitigate any potential impacts, and sampling approach basis;
- Section 3: Summary of the 2009 release, actions undertaken to assess and mitigate any potential impacts, and sampling approach basis;
- Section 4: Proposed sampling data analysis.



2 2006 Release

2.1 2006 RELEASE BACKGROUND

On December 27, 2006, a release from the Phase I Gyp Stack located at the CPO facility occurred, following a dike failure. Water flowed into the decant ditch, subsequently overflowed its banks, and then flowed onto the Subject Properties in two locations where topographical depressions confined the process water. Figure 2 shows the two areas on the Subject Properties potentially impacted by the 2006 release; the larger area has been referred to as “Area A” and the smaller area as “Area B.” The water that accumulated on the Subject Properties quickly froze due to low temperatures. According to EPA records, by December 30, 2006, approximately 1.76 million gallons of water/ice were recovered and removed. Crushed limestone was placed in the spill footprint to neutralize any residual acidity. A survey was conducted to accurately delineate the extent of the affected areas for later reference (Figure 2).

2.1.1 Previous Nu-West Sampling Activities

In 2007 and 2008, on behalf of Nu-West, Enercon conducted soil sampling activities in Area A. A total of 12 soil samples were collected locations in Area A where water had accumulated and froze. A summary of the analytical results is provided in Appendix A. Based upon these sampling results, Enercon developed an ecological risk assessment for this area (*Ecological Risk Assessment, Nu-West Conda Facility, Soda Springs, ID* (Enercon, April 2008)), and an excavation plan (*Proposal for Performing Soil Removal Oversight and Confirmation Sampling* (Enercon, May 5, 2008)), which were submitted to and approved by IDEQ. The excavation plan specified removing soil from areas surrounding the five sample locations with elevated results and collecting verification samples to confirm that impacted soil had been sufficiently removed.

The initial excavation work was conducted on June 24, 2008 and involved removing one foot of soil around each of the five sample locations. A total of 34 verification soil samples were collected in conjunction with the excavation and analyzed for metals of interest. Based on the analytical results for these samples, a second phase of excavation was conducted on July 2, 2008 to address areas where metals concentrations remained elevated. Following the second excavation, 14 additional verification soil samples were collected, including four samples from outside the excavated areas. Based on the analytical results for the second soil sampling phase, a third excavation phase was conducted on July 10, 2008, followed by the collection of 12 further soil verification samples. Elevated metals were found in some of the verification samples, and a fourth excavation phase was performed on July 17, 2008. After the fourth excavation phase, three verification soil samples were collected on July 17, 2008. A summary of the verification sample results is provided in Appendix A.

These four excavation phases removed up to two feet of soil from the surface of the impacted areas (Figure 3). A total of 63 verification soil samples were collected after excavation events to confirm that the impacted soil had been adequately removed. Once the soil excavation was considered complete, the excavated areas were backfilled with clean topsoil.



2.1.2 Torgesen Sampling Activities

In June, July, and October 2008, on behalf of Torgesen Ranch, we understand that Bio-West collected eight soil samples from areas where water had previously accumulated. Seven soil samples were collected from Area A and one from Area B. The locations of the initial three samples collected by Bio-West from Area A were subsequently excavated by Enercon. The remaining five soil samples were collected after excavation activities were completed. The analytical results indicated that chromium, cadmium, selenium, and/or vanadium concentrations in three of the five post-excavation samples exceeded the TRGs.

Based on these data, and in accordance with the data quality assurance and data quality objectives established in the Work Plan, additional sampling is proposed to further evaluate soil quality in the areas on the Subject Properties potentially impacted by the 2006 release.

2.2 SOIL SAMPLING PLAN—2006 RELEASE

Additional soil sampling will be conducted on the Subject Properties in accordance with U.S. EPA guidance presented in SW-846² and ASTM D 4687-95³. As shown in Figure 4, sampling is proposed across the two release areas along a series of transects located approximately 275 feet apart. In Area A, the locations of transects were adjusted to exclude areas previously excavated in 2008. A total of ten transects are located in Area A and four in Area B. For each transect, samples will be collected as three-point composite samples, with one sample centered at the topographical low along each transect line and two additional samples collected approximately equally spaced from the topographical low along the transect out towards the lateral extent of the 2006 release area.

At each sampling location, samples will be collected from three depth intervals for a total of 126 discrete samples (14 transects, 3 locations per transect and 3 depths per transect):

- Shallow: Top 6 inches of native soil;
- Intermediate: 6-12 inches below ground surface (bgs)—to be held for analysis; and
- Deeper: 18-24 inches bgs.

The laboratory will be instructed to composite the shallow and deeper samples from each transect. The intermediate samples will be held by the laboratory until results from the shallow and deeper samples are evaluated. These intermediate samples will be analyzed, as necessary, to complete vertical delineation.

If crushed limestone or fill soil is encountered, which would suggest the area was previously excavated, the sample location will be adjusted to an alternative location within the segment based on field judgment. The actual sample locations will be recorded by field GPS survey.

² Chapter 9 of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, U.S. EPA (also known as SW-846).

³ D 4687-95, *Standard Guide for General Planning of Waste Sampling*, ASTM International (2006)



The protocols for soil sample collection, field quality assurance/quality control samples, sample container requirements, sample packaging and shipping, and chain-of-custody procedures will be the same as those described in the Work Plan. Soil samples will be analyzed by Accutest Laboratories (Accutest) for the following parameters:

- antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, lead, magnesium, nickel, potassium, selenium, sodium, thallium, and vanadium by EPA SW-846 Method 6010B
- chromium by EPA SW-846 Method 7196
- fluoride by EPA SW-846 Method 9056A
- pH using EPA SW-846 Method 9045

These 28 composite samples (14 shallow and 14 deeper) are expected to provide representative concentrations of the constituents of potential interest in areas that were potentially affected by the 2006 release.



3 2009 Release

3.1 2009 RELEASE BACKGROUND

In April 2009, low pH water was released on the southwest side of the Old Gyp Stack (F-GYP-0), immediately north of the West Cooling Pond. The water entered the decant ditch and a portion of the water is believed to have overflowed onto property owned by Richard Torgesen, which is part of the Subject Properties. The area on the Subject Properties potentially affected by this release measured approximately 120 feet by 120 feet (Figure 5) with the majority of the water contained to an area measuring approximately 60 feet by 60 feet. To assess the potential impacts of the release, five surficial soil samples (2-4 inches bgs) were collected in the spill area and one sample was collected outside the spill area. Also, a sample of gypsum material that flowed into the area was collected for analysis. The samples were analyzed for phosphorus, pH, and metals. The analytical results indicated that chromium, cadmium, selenium, and vanadium concentrations were well below the TRGs (Appendix B). However, concentrations of chromium, cadmium, selenium, and vanadium and other constituents of potential interest were above the screening criteria established in the Work Plan. Based on these results, additional sampling is proposed to further evaluate soil quality in the 2009 release area on the Subject Properties.

3.2 SOIL SAMPLING PLAN—2009 RELEASE

To confirm the extent of the impacts, if any, on the portion of the Subject Properties potentially affected by the 2009 release, additional sampling will be conducted. The area covers approximately 14,000 square feet. A 3-point composite sample will be collected at the four locations shown in Figure 6. At each location, soil samples will be collected from three intervals for laboratory analysis (a total of 12 primary samples):

- Shallow: Top 6 inches of native soil;
- Intermediate: 6-12 inches bgs—to be held for analysis; and
- Deeper: 18-24 inches bgs.

The laboratory will be instructed to composite the shallow and deeper samples from each transect. The intermediate samples will be held by the laboratory until results from the shallow and deeper samples are evaluated. These intermediate samples will be analyzed as necessary to complete vertical delineation.

Soil samples will be analyzed by Accutest for the following parameters:

- antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, lead, magnesium, nickel, potassium, selenium, sodium, thallium, and vanadium by EPA SW-846 Method 6010B
- chromium by EPA SW-846 Method 7196
- fluoride by EPA SW-846 Method 9056A
- pH using EPA SW-846 Method 9045



These samples are expected to provide a representative sample set of the potentially impacted area.



4 Soil Sampling Protocols

This section describes the protocols for soil sample collection. Soil samples will be collected using direct-push (i.e., Geoprobe®) methods. Continuous soil cores will be taken from each location beginning at the ground surface and extending to 24 inches bgs. Samples will be collected for laboratory analysis from shallow (0-6 inches bgs), intermediate (6-12 inches bgs), and deeper intervals (18-24 inches bgs). The procedures for soil sampling using direct push equipment are specified in Standard Operating Procedure (SOP) #24 in Appendix C of the Quality Assurance Project Plan (QAPP) for the Work Plan.

4.1 FIELD QA/QC SAMPLES

Soil sampling will include the collection of blind field duplicates at a ratio of 1:10, and equipment blanks on a daily basis. These QA/QC samples will be collected in accordance with SOP #21 in Appendix C of the QAPP.

4.2 EQUIPMENT DECONTAMINATION

Decontamination of drilling or direct-push equipment will be performed between each boring location, and decontaminated sampling equipment will be used for the collection of each sample. Decontamination procedures are specified in SOPs #15 and #19 (Appendix C of the QAPP). Decontamination will include the use of a phosphate-free detergent, such as Liquinox®.

4.3 SAMPLE CONTAINER REQUIREMENTS

Soil samples will be placed in new laboratory-supplied, clean glass sample containers. Sample containers and preservatives will be as specified by the laboratory in accordance with SOP #2 in the QAPP. Each sample container will be labeled with a unique label description that will include the sample identification number, date and time of sample collection, analyses to be performed, sampler's initials, and the project name and number.

Following collection, each sample will be placed in a cooler and chilled to approximately 4 degrees Celsius. Samples will be packaged and shipped according to procedures described in Section 5.4, below.

4.4 SAMPLE PACKAGING AND SHIPPING

The lid of each sample jar will be securely tightened and samples placed in re-sealable plastic bags. Samples will be placed into a sample cooler or other appropriate shipping vessel and packed carefully to minimize the potential for breakage or spilling by using packing material (e.g., bubble wrap). Appropriate measures will be taken to ensure that glass sample containers will not touch each other inside the sample transportation container.

Ice in watertight re-sealable plastic bags will be placed on top of the samples and packing. If shipped by common carrier, the appropriate COC forms will accompany the



samples sealed in the shipping cooler in watertight packaging. The COC forms must be dry and legible upon receipt at the laboratory.

After packing, the containers must be sealed and managed in accordance with the COC requirements in Section 5.5. If being shipped by common carrier, an appropriate completed air bill or freight bill will be taped to the outside of the container.

4.5 CHAIN OF CUSTODY PROCEDURES

COC procedures consist of several levels of documentation, including the field logbook, the COC form, and custody seals. These documents serve as the record for tracking sample collection and transport. Once a sample is obtained, it must be maintained under COC procedures until it is in the custody of the analytical laboratory. The person collecting the sample is responsible for the custody of the sample until it is properly transferred or dispatched. WSP's standard COC forms or laboratory-supplied COC forms shall be used.

Field Log Book

The field logbook serves as official documentation of sampling activities. Field logbooks will be constructed of bound, sequentially numbered, water-resistant notepaper, and records will be kept in waterproof ink. Field personnel shall make frequent detailed entries to provide an adequate record of activities conducted during each day on site. SOP #1 provides additional details of required protocol for the field logbook.

Chain-of-Custody Form

A COC form will be filled out either simultaneously with the notations in the logbook or shortly after sample collection is completed for the day. The information required on the COC form includes the project name and number; sampler's name and signature; sample numbers; sample matrix; date and time of sample collection; quantity of sample containers; analyses required; and custody sequence.

If the samples are being shipped by common carrier, the COC form will include the carrier airbill number in lieu of a custody signature from a courier employee. In this event, the COC form will be packed in a cooler with the laboratory samples in a re-sealable plastic bag. One copy of the COC form will be retained by the sampler. The sender's copy of the air bill will be affixed to this copy of the COC form and will become a part of the COC documentation. The original COC form will remain with the samples during shipment. The receiving laboratory will be instructed to sign the COC form and return one copy with the analytical data package. The original COC form will remain with the samples until their ultimate disposal.

Custody Seals

To complete custody procedures for shipping, each sample cooler or container will be sealed with custody seals that are to be signed and dated by the shipper. The custody seal is a label with adhesive backing that is sealed over the container latch or across the closure point. If broken during transit, the sample custody has been compromised, which indicates potential tampering during transit. If unbroken, the integrity of the samples is assumed to be maintained.



5 Data Analysis and Reporting

The analytical results will be evaluated against data quality objectives established in the Work Plan. The analytical results will be compared to the more stringent of EPA PRG Screening levels for residential soil or IDEQ risk-based rules and IDTLs for commercial/industrial direct exposure and for the protection of groundwater and surface water. The results also will be evaluated as part of an overall assessment of conditions across the Site.

Laboratory results for the samples that are analyzed immediately will be reviewed to determine the required laboratory analyses (if any) for intermediate depth samples that are initially held pending data review. If the analytical results for deeper (18-24 inches bgs) samples indicate that concentrations of all constituents of potential interest are below the more stringent of the either EPA PRG screening levels for residential soil or IDTL value in the deepest sample analyzed, then the intermediate (6-12 inches bgs) samples from that boring will be analyzed for the parameters that exceeded those values in the shallower sample.

The results of the investigation will be summarized, including all data, in Geographic GIS for easy access and interpretation. The map depicting the sampling will be compiled into a report summarizing means, methods, and results. Soil sampling analytical results identifying the constituent concentrations will be included on a GIS map. Nu-West will evaluate whether these data are sufficient and whether additional soil sampling may be warranted.



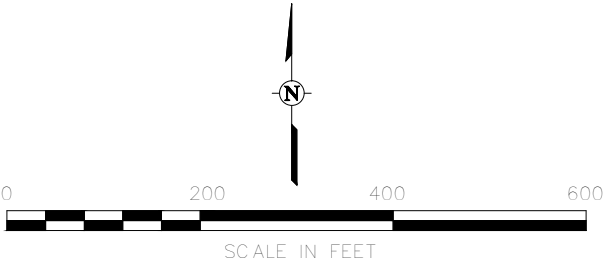
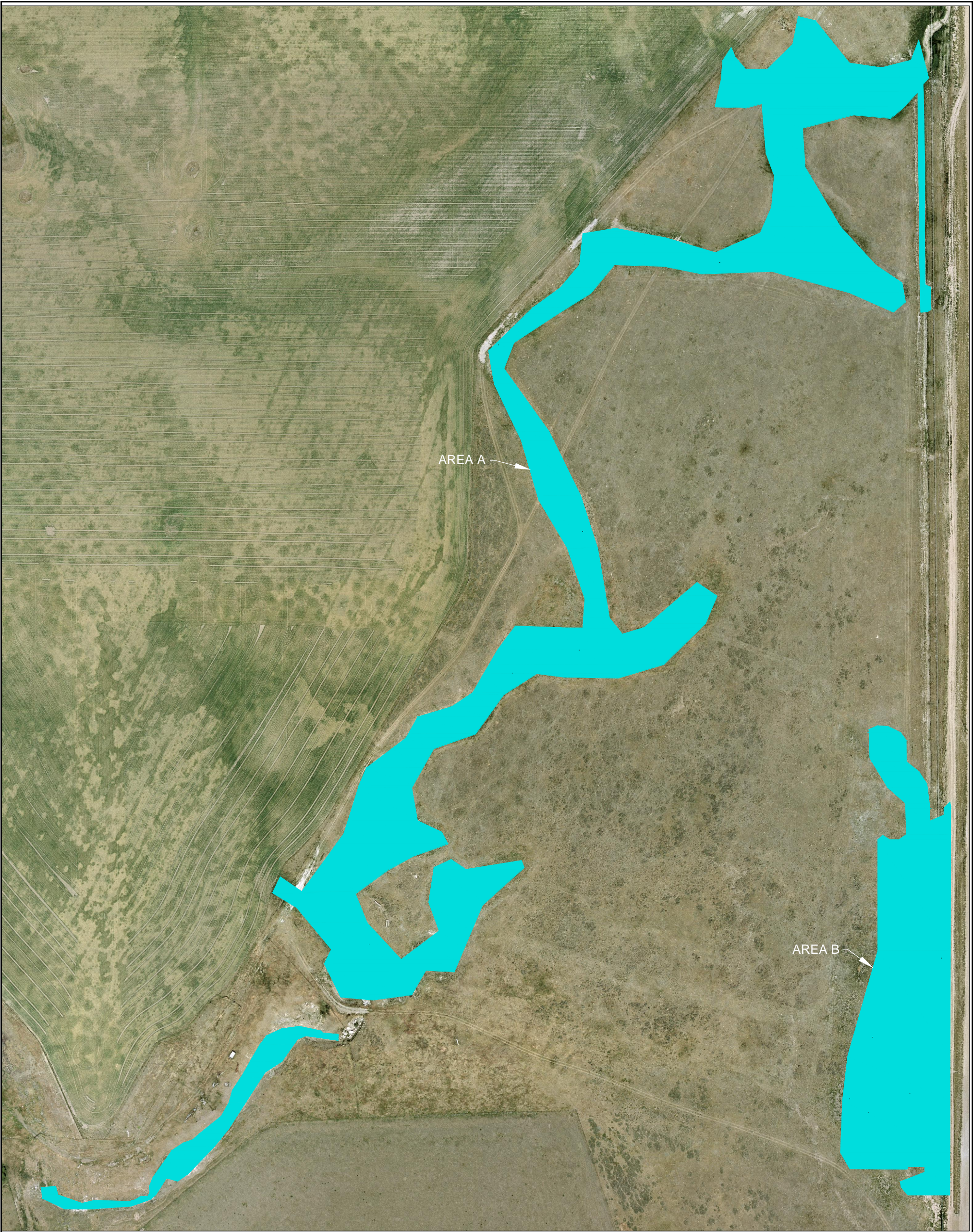
Figures



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Figure 1
2006 And 2009 Release Areas
Nu-West CPO Facility and Subject Properties
Soda Springs, Idaho


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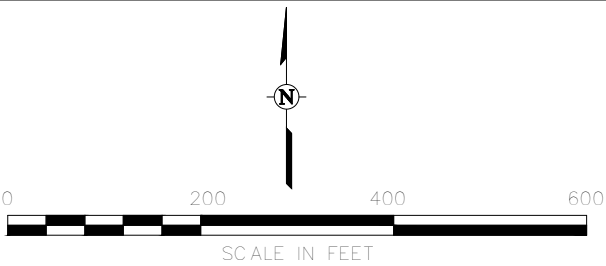
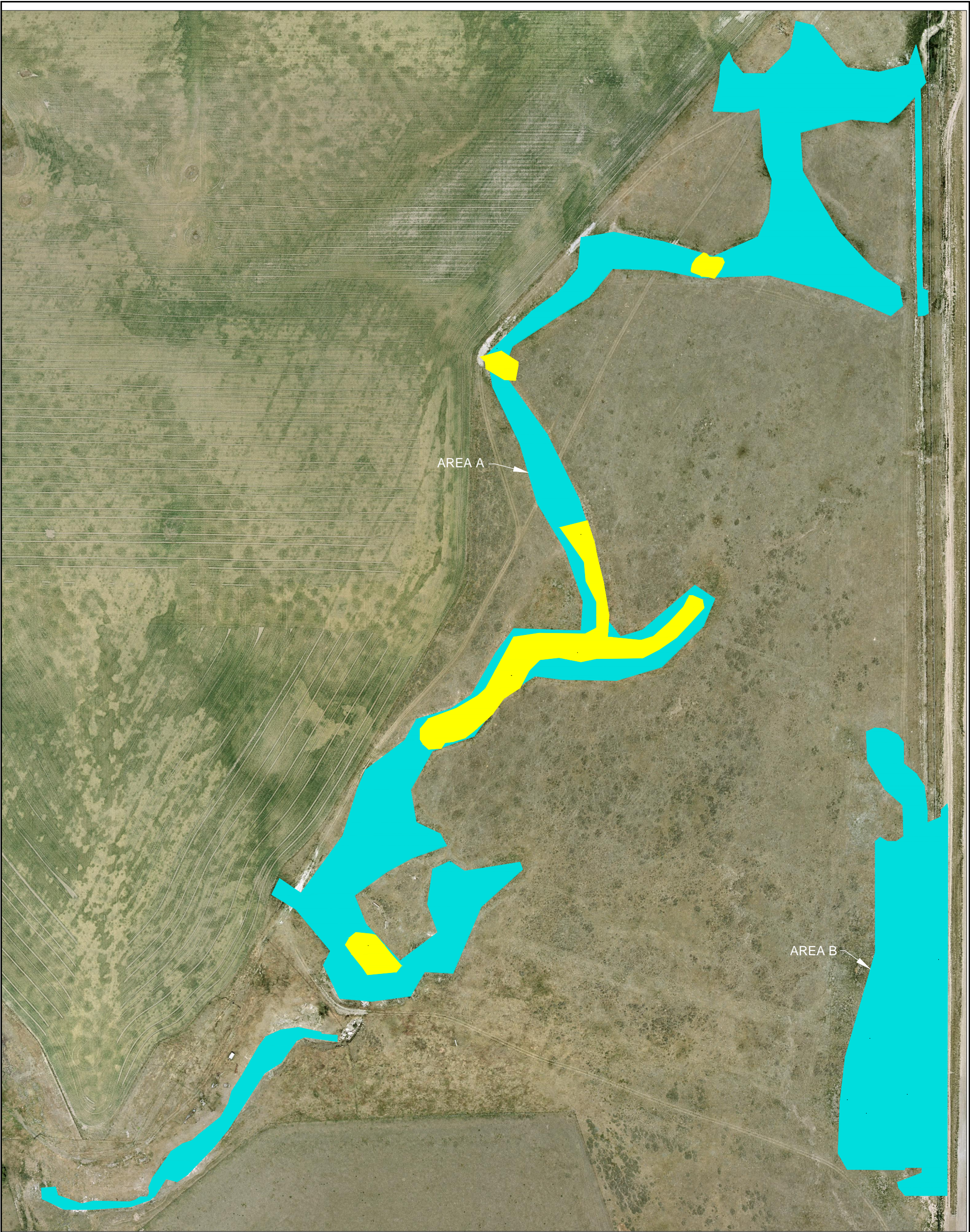


LEGEND

DECEMBER 2006 RELEASE AREA

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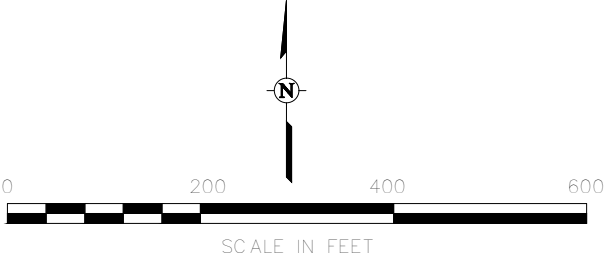
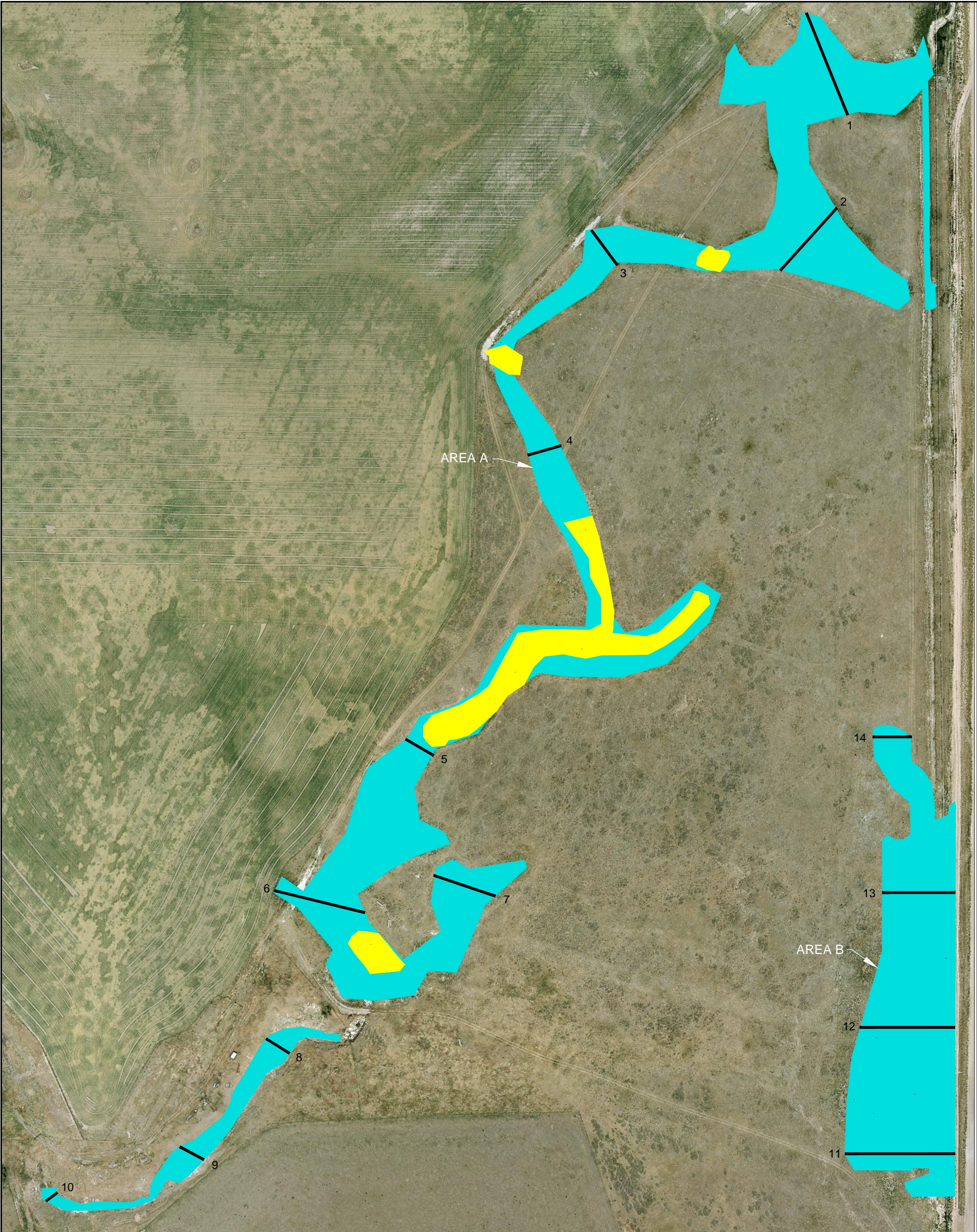
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DECEMBER 2006 RELEASE AREA

AREAS EXCAVATED IN 2008

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00004007-005 Drawing Number	Figure 3	 WSP Environment & Energy 4600 South Ulster Street Suite 930 Denver, Colorado 80237 (303) 850-9200	AREA AFFECTED BY DECEMBER 2006 RELEASE EXCAVATED IN 2008 NU-WEST CPO SODA SPRINGS, IDAHO PREPARED FOR NU-WEST INDUSTRIES, INC.	<div>DRAWN BY: DML</div> <div>CHECKED: MT</div> <div>APPROVED:</div>	SEAL	<table><thead><tr><th colspan="3">REVISIONS</th></tr><tr><th>REV</th><th colspan="2">DESCRIPTION</th></tr></thead><tbody><tr><td>1</td><td>Revised:</td><td>Checked:</td><td>Approved:</td></tr><tr><td>2</td><td>Revised:</td><td>Checked:</td><td>Approved:</td></tr><tr><td>3</td><td>Revised:</td><td>Checked:</td><td>Approved:</td></tr></tbody></table>	REVISIONS			REV	DESCRIPTION		1	Revised:	Checked:	Approved:	2	Revised:	Checked:	Approved:	3	Revised:	Checked:	Approved:
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- LEGEND
- SEGMENTS TO BE SAMPLED (1 TO 20)
 - DECEMBER 2006 RELEASE AREA
 - AREAS EXCAVATED IN 2008

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Figure 4

Drawing Number

00004007-005



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PROPOSED SAMPLING IN
DECEMBER 2006 RELEASE AREA

NU-WEST CPO
SODA SPRINGS, IDAHO

PREPARED FOR
NU-WEST INDUSTRIES, INC.

DRAWN BY	DML
CHECKED	MT
APPROVED	

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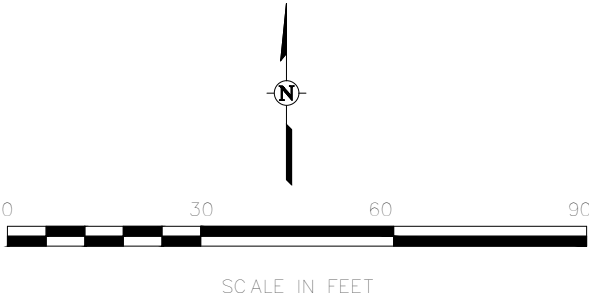
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OLD GYPSTACK
(F-GYP-O)

CELL #1

WEST COOLING POND



LEGEND

—○—○—○— APPROXIMATE 2009 RELEASE AREA

Reference: Drawing 09-01-223
Drawn by Agrium, April 27, 2009

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Figure 5



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AREA AFFECTED BY APRIL 2009 RELEASE

NU-WEST CPO
SODA SPRINGS, IDAHO

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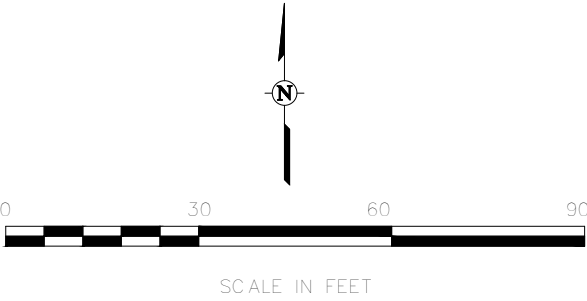
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REVISIONS			
REV	DESCRIPTION		
△	Revised:	Checked:	Appr.:
△	Revised:	Checked:	Appr.:
△	Revised:	Checked:	Appr.:



WEST COOLING POND

Reference: Drawing 09-01-223
Drawn by Agrium, April 27, 2009



- LEGEND
- PROPOSED SOIL SAMPLE LOCATION
 - APPROXIMATE 2009 RELEASE AREA

DRAFT
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Attorney-Client Communication
Attorney Work Product

00004007-005

Figure 6



WSP Environment & Energy
4600 South Ulster Street Suite 930
Denver, Colorado 80237
(303) 850-9200

PROPOSED SAMPLING IN
2009 RELEASE AREA

NU-WEST CPO
SODA SPRINGS, IDAHO

PREPARED FOR
NU-WEST INDUSTRIES, INC.

DRAWN BY	DML
CHECKED	MT
APPROVED	

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DATE

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	Revised:	Checked:	Approved:
	Revised:	Checked:	Approved:
	Revised:	Checked:	Approved:

Appendix A – Summary of Analytical Results 2006 Release (2006 and 2008 Results)

Table 1: Sampling results from ENERCON ERA
EPA Method 200.8

Sample Site	Total Cd mg/Kg	Total Cr mg/Kg	Total Se mg/Kg	Total V mg/Kg
#1	15.85	21.01	1.72	11.01
#2	25.87	145.3	5.323	160.9
#3	8.187	39.53	2.692	38.96
#4	4.915	36.35	3.244	22.77
#5	60.17	694.3	9.61	802.1
#6	9.341	47.75	3.115	51.45
#7	41.87	291.5	7.406	378.3
#8	99.98	1017	29.71	1480
#9	120	1630	31.8	2066
#10	4.85	53.5	3.56	92.2
#11	6.962	44.69	3.31	60.05
#12	4.477	47.4	2.288	73.92
Target Remediation Levels	24.5	100	28	100

Soil concentrations shown in bold blue font exceed Target Remediation Levels developed in the ERA and approved by IDEQ (sample sites are reflected on Figure 1).

Soil Sample Results
Nu-West/Agrium Conda Facility
Soda Springs, ID

Sample ID	Date	Depth	pH	Cadmium (mg/kg)	Chromium (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)
SP2-S-0-1	06/24/08	0-1	8.1	0.64	4.7	26	5
SP2-N-0-1	06/24/08	0-1	8.1	<0.31	4.5	28	4
SP2-W-0-1	06/24/08	0-1	8	1.4	11	25	10
SP2-E-0-1	06/24/08	0-1	8	2	12	20	11
SP2-C-0-1	06/24/08	0-1	8.2	0.44	7.3	16	6.2
SP5-NW-0-1	06/24/08	0-1	8.1	2.1	7	14	31
SP5-N-0-1	06/24/08	0-1	8	0.83	6.5	26	28
SP5-SE-0-1*	06/24/08	0-1	7.8	13	100	15	140
SP5-S-0-1	06/24/08	0-1	7.9	4.4	20	8.8	97
SP5-C-0-1	06/24/08	0-1	8.1	2.7	7.4	16	49
SP7-E-0-1	06/24/08	0-1	7.9	5.8	19	23	19
SP7-C-0-1	06/24/08	0-1	7.7	9.4	58	15	86
SP7-W-0-1	06/24/08	0-1	8.1	1.3	8.3	16	30
SP78-E-0-1	06/24/08	0-1	7.9	4.5	15	15	32
SP78-C-0-1	06/24/08	0-1	7.8	9.1	20	14	37
SP78-W-0-1	06/24/08	0-1	7.8	3.6	12	13	28
SP87-E-0-1	06/24/08	0-1	8	0.78	10	13	26
SP87-C-0-1*	06/24/08	0-1	7.7	30	340	18	410
SP87-W-0-1	06/24/08	0-1	8.1	0.87	9.3	17	46
SP8-S-0-1*	06/24/08	0-1	7.6	11	120	20	140
SP8-C-0-1	06/24/08	0-1	7.7	18	57	17	72
SP8-N-0-1*	06/24/08	0-1	7.5	63	1300	32	1700
SP89A-S-0-1*	06/24/08	0-1	8	91	1100	33	1600
SP89A-C-0-1*	06/24/08	0-1	8	20	100	21	190
SP89A-N-0-1	06/24/08	0-1	7.9	20	46	21	74
SP89B-C-0-1*	06/24/08	0-1	8	86	930	33	1300
SP89C-C-0-1*	06/24/08	0-1	7.9	22	140	22	220
SP89D-C-0-1*	06/24/08	0-1	7	100	1400	32	1700
SP98-E-0-1*	06/24/08	0-1	7.1	7.5	46	15	110
SP98-C-0-1*	06/24/08	0-1	7.5	29	300	19	470
SP98-W-0-1	06/24/08	0-1	7.2	10	14	12	75
SP9-S-0-1	06/24/08	0-1	7.6	0.8	12	15	43
SP9-C-0-1*	06/24/08	0-1	7.8	12	57	19	150
SP9-N-0-1	06/24/08	0-1	7.9	9.5	16	13	46
BW-TORG-1*	06/27/08	NA	NA	20	220	16	340
BW-TORG-2*	06/27/08	NA	NA	10	66	17	180
BW-TORG-3*	06/27/08	NA	NA	16	120	22	130
SP5-OE-2-2.5	07/02/08	2-2.5	7.4	3.1	19	3.8	57
SP7C-OE-2-2.5	07/02/08	2-2.5	8.3	2.3	12	12	42
SP8-OE-2-2.5	07/02/08	2-2.5	6.7	4	21	3.6	46
SP89A-OE-2-2.5*	07/02/08	2-2.5	7.9	5.7	27	18	120
SP89B-C-OE-2-2.5	07/02/08	2-2.5	8.1	2.9	15	9	67
SP89C-C-OE-2-2.5	07/02/08	2-2.5	8.1	3.3	15	14	100
SP89D-C-OE-2-2.5	07/02/08	2-2.5	7.2	0.54	14	<1.2	85

Soil Sample Results
Nu-West/Agrium Conda Facility
Soda Springs, ID

Sample ID	Date	Depth	pH	Cadmium (mg/kg)	Chromium (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)
SP89D-WS-0	07/02/08	0-1	8	6	41	<1.0	76
SP89D-WSA-0	07/02/08	0-1	7.4	8.6	53	<1.0	100
SP89D-ES-0*	07/02/08	0-1	7.4	10	100	3.1	120
SP89D-ESA-0	07/02/08	0-1	7.3	7	41	<1.0	80
SP98E-OE-2-2.5	07/02/08	0-1	7.9	1.1	10	<6.0	100
SP9-C-OE-2-2.5	07/02/08	0-1	8.1	6.2	17	<1.2	77
SP-87-C-OE-2-2.5	07/02/08	0-1	8.3	<0.31	18	<1.2	40
SP10-N-0-1*	07/09/08	0-1	6.7	38	22	20	130
SP10-E-0-1*	07/09/08	0-1	7.2	66	340	24	460
SP10-S-0-1*	07/09/08	0-1	7.2	18	160	24	300
SP10-W-0-1	07/09/08	0-1	8.1	0.87	13	15	66
SP10-C-0-1	07/09/08	0-1	7.7	3.3	23	4.9	87
SP89A-OE2-2-2.5	07/09/08	2-2.5	8	0.66	10	24	40
SP89D-OE2-2-2.5*	07/09/08	2-2.5	8.2	0.8	9.1	37	21
SP3-N-0-1	07/10/08	0-1	9	<0.26	0.68	38	2.1
SP3-E-0-1	07/10/08	0-1	7.9	0.42	3.7	42	5.8
SP3-S-0-1	07/10/08	0-1	7.9	0.4	6	31	9.8
SP3-W-0-1	07/10/08	0-1	8.2	0.33	3.1	32	5.3
SP3-C-0-1	07/10/08	0-1	8.2	0.33	4.5	36	7
SP-10-OE-N-2-2.5	07/17/08	2-2.5	6.7	5.7	20	7.7	72
SP-10-OE-E-2-2.5	07/17/08	2-2.5	7.2	3.3	19	12	59
SP-10-OE-S-2-2.5	07/17/08	2-2.5	7	1.9	8.2	16	65
Proposed Remediation Goals			6.5 - 8.5	24.5	100	28	100

Values in *bold italic* font represent concentrations greater than Proposed Remediation Goals.

* = Soils in the area of these samples were over excavated and resampled.

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Appendix B – Summary of Analytical Results 2009 Release



IAS — ENVIRO CHEM
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Agrium Inc. CPO
Coleman Kavanagh
3010 Conda Road
Soda Springs, ID 83276

Date Submitted: 4/7/2009
Date Reported: 4/9/2009

Certificate of Analysis

Sample Description: TS #2 SOIL 6" DEPTH
Sampling Date: 04-06-2009
Sampling Time: 09:30
Date Received: 04-07-2009
Lab Tracking #: 104098405

P2O5 ppm	8390	ppm	ICP	04/07/2009	GP
pH units	4.2	pH units	150.1	04/07/2009	BN
Total Aluminum ug/Kg 200.8	15100000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	625	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	3508	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	151500	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	573	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	9982	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	7958000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	1563	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	30000	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5437	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	16980	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	7068	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	15000000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	12510	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	13520	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3925000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	514100	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	500	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	17940	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	4278000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	31540	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	611	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	158	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	690600	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	56640	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	200	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	5550	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	42390	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	106100	ug/Kg	200.8	04/07/2009	RP



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Agrium Inc. CPO
 Coleman Kavanagh
 3010 Conda Road
 Soda Springs, ID 83276

Date Submitted: 4/7/2009
 Date Reported: 4/8/2009

Certificate of Analysis

Sample Description: Gyp #3
 Sampling Date: 04-06-2009
 Sampling Time: 09:35
 Date Received: 04-07-2009
 Lab Tracking #: 104098403

P2O5 ppm	8854	ppm	ICP	04/07/2009	GP
pH units	2.0	pH units	150.1	04/07/2009	BN
Total Aluminum ug/Kg 200.8	4987500	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	723	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	1818	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	65120	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	173	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	9501	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	169100000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	492	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	31320	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	571	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	8124	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	2293	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	2009000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	7563	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	2518	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	800400	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	37740	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	1680	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	4235	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	27650000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	36970	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	7879	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	2286	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	1221000	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	439000	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	307	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	5698	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	23530	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	44010	ug/Kg	200.8	04/07/2009	RP



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Sample Description: TS #4 SOIL 4" DEPTH

Sampling Date: 04-06-2009

Sampling Time: 09:40

Date Received: 04-07-2009

Lab Tracking #: 104098406

ANALYTE	RESULT	UNIT	METHOD	ANALYSIS DATE	STATUS
P2O5 ppm	6301	ppm	ICP	04/07/2009	GP
pH units	4.9	pH units	150.1	04/07/2009	BN
Total Aluminum ug/Kg 200.8	13720000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	< 100	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	3403	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	157400	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	736	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	4635	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	6200000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	1178	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	21430	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5605	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	15160	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	6661	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	13895000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	13400	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	12180	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3740000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	606000	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	323	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	15230	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	3562000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	28330	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	381	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	123	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	409000	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	34250	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	160	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	2053	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	23710	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	91820	ug/Kg	200.8	04/07/2009	RP



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Sample Description: TS #5 SOIL 2" DEPTH

Sampling Date: 04-06-2009

Sampling Time: 09:50

Date Received: 04-07-2009

Lab Tracking #: 104098407

P2O5 ppm	7007	ppm	ICP	04/07/2009	GP
pH units	4.4	pH units	150.1	04/07/2009	BN
Total Aluminum ug/Kg 200.8	13960000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	< 100	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	3373	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	149600	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	713	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	6263	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	6272000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	1330	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	23420	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5383	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	14510	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	6618	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	13560000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	12910	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	12460	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3647000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	562800	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	368	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	15250	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	3990000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	29210	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	422	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	132	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	512700	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	41470	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	170	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	2824	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	27040	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	97990	ug/Kg	200.8	04/07/2009	RP



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Sample Description: TS #6 SOIL 3" DEPTH

Sampling Date: 04-06-2009

Sampling Time: 10:00

Date Received: 04-07-2009

Lab Tracking #: 104098408

Parameter	Result	Unit	Method	Date	Lab
P2O5 ppm	6732	ppm	ICP	04/07/2009	GP
pH units	4.2	pH units		04/07/2009	BN
Total Aluminum ug/Kg 200.8	14270000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	< 100	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	3740	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	142900	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	639	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	7123	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	4371000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	1497	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	25070	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5618	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	16220	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	6876	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	15325000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	12690	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	13000	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3863000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	550200	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	521	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	16190	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	3911000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	31550	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	459	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	107	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	501100	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	37960	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	179	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	3959	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	35720	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	94540	ug/Kg	200.8	04/07/2009	RP



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Sample Description: TS #7 SOIL 3" DEPTH

Sampling Date: 04-06-2009

Sampling Time: 10:00

Date Received: 04-07-2009

Lab Tracking #: 104098409

P2O5 ppm	3229	ppm	ICP	04/07/2009	GP
pH units	6.1	pH units	150.1	04/07/2009	BN
Total Aluminum ug/Kg 200.8	10715000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	< 100	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	2881	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	146600	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	703	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	1212	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	5694000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	816	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	14340	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5298	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	13150	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	5832	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	12395000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	12310	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	10130	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3475000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	545500	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	196	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	13240	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	3484000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	23230	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	309	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	120	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	94790	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	24700	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	119	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	818	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	15470	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	61590	ug/Kg	200.8	04/07/2009	RP



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Sample Description: TS #8 CONTROL SOIL 3" DEPTH

Sampling Date: 04-06-2009

Sampling Time: 10:20

Date Received: 04-07-2009

Lab Tracking #: 104098410

Analyte	Result	Units	Method	Analysis Date	Remarks
P2O5 ppm	3238	ppm	ICP	04/07/2009	GP
pH units	6.6	pH units		04/07/2009	BN
Total Aluminum ug/Kg 200.8	10605000	ug/Kg	200.8	04/07/2009	RP
Total Antimony ug/Kg 200.8	< 100	ug/Kg	200.8	04/07/2009	RP
Total Arsenic ug/Kg 200.8	2732	ug/Kg	200.8	04/07/2009	RP
Total Barium ug/Kg 200.8	151000	ug/Kg	200.8	04/07/2009	RP
Total Beryllium ug/Kg 200.8	693	ug/Kg	200.8	04/07/2009	RP
Total Cadmium ug/Kg 200.8	1410	ug/Kg	200.8	04/07/2009	RP
Total Calcium ug/Kg 200.8	5521000	ug/Kg	200.8	04/07/2009	RP
Total Cesium ug/Kg 200.8	820	ug/Kg	200.8	04/07/2009	RP
Total Chromium ug/Kg 200.8	13960	ug/Kg	200.8	04/07/2009	RP
Total Cobalt ug/Kg 200.8	5366	ug/Kg	200.8	04/07/2009	RP
Total Copper ug/Kg 200.8	12760	ug/Kg	200.8	04/07/2009	RP
Total Gallium ug/Kg 200.8	5942	ug/Kg	200.8	04/07/2009	RP
Total Iron ug/Kg 200.8	11960000	ug/Kg	200.8	04/07/2009	RP
Total Lead ug/Kg 200.8	12380	ug/Kg	200.8	04/07/2009	RP
Total Lithium ug/Kg 200.8	9997	ug/Kg	200.8	04/07/2009	RP
Total Magnesium ug/Kg 200.8	3361000	ug/Kg	200.8	04/07/2009	RP
Total Manganese ug/Kg 200.8	558200	ug/Kg	200.8	04/07/2009	RP
Total Mercury ug/Kg 200.8	< 50	ug/Kg	200.8	04/07/2009	RP
Total Molybdenum ug/Kg 200.8	220	ug/Kg	200.8	04/07/2009	RP
Total Nickel ug/Kg 200.8	12790	ug/Kg	200.8	04/07/2009	RP
Total Potassium ug/Kg 200.8	3457000	ug/Kg	200.8	04/07/2009	RP
Total Rubidium ug/Kg 200.8	24440	ug/Kg	200.8	04/07/2009	RP
Total Selenium ug/Kg 200.8	398	ug/Kg	200.8	04/07/2009	RP
Total Silver ug/Kg 200.8	126	ug/Kg	200.8	04/07/2009	RP
Total Sodium ug/Kg 200.8	68470	ug/Kg	200.8	04/07/2009	RP
Total Strontium ug/Kg 200.8	24700	ug/Kg	200.8	04/07/2009	RP
Total Thallium ug/Kg 200.8	137	ug/Kg	200.8	04/07/2009	RP
Total Uranium ug/Kg 200.8	928	ug/Kg	200.8	04/07/2009	RP
Total Vanadium ug/Kg 200.8	15430	ug/Kg	200.8	04/07/2009	RP
Total Zinc ug/Kg 200.8	62730	ug/Kg	200.8	04/07/2009	RP

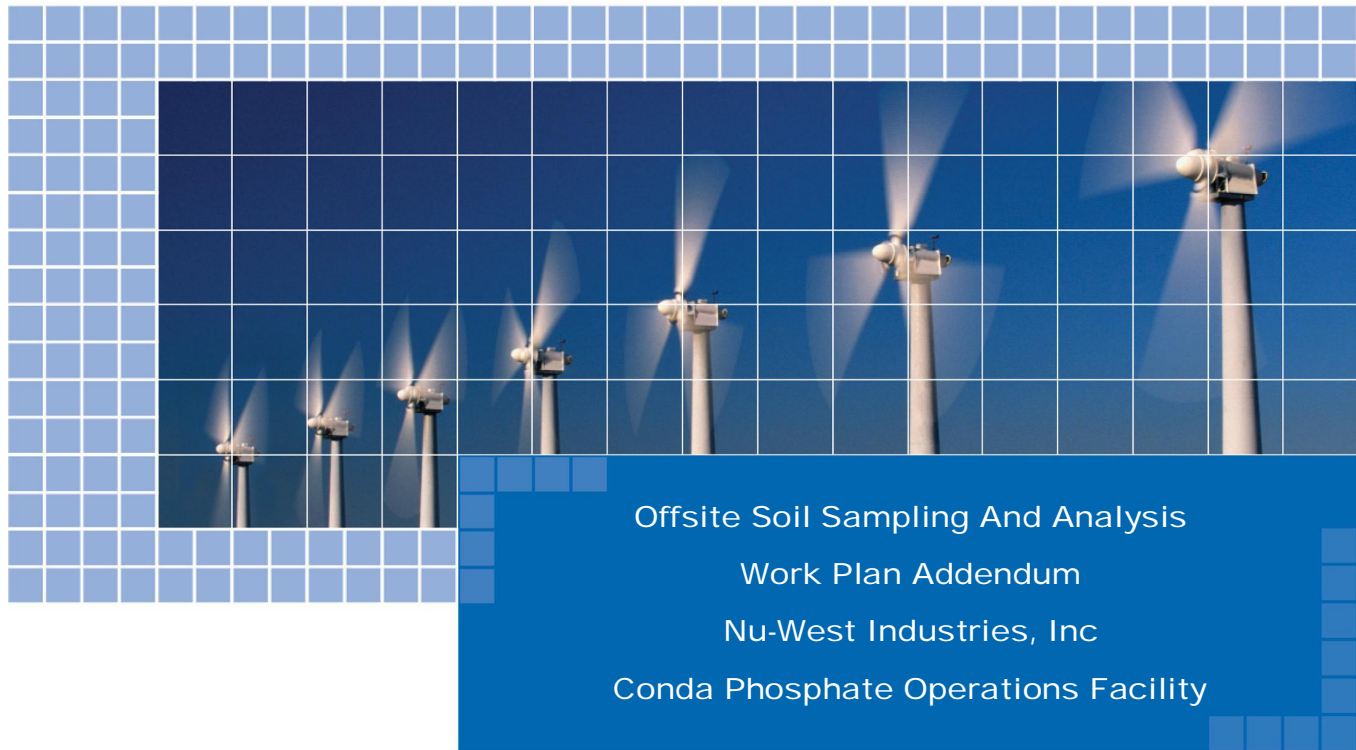
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Lab Director

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Figure 1 – Extent of 2006 and 2009 Release Areas Nu-West CPO Facility and Subject Properties

Figure 2 – Extent of December 2006 Release

Figure 3 – 2008 Excavation within December 2006 Release Area

Figure 4 – Proposed Sampling in December 2006 Release Area

Figure 5 – Extent of 2009 Release

Figure 6 – Proposed Sampling in April 2009 Release Area

Appendices

Appendix A Summary of Enercon Soil Sampling Results 2006 Release (2006 and 2008 Results)

Appendix B Summary of Enercon Soil Sampling Results 2009 Release



1 Introduction and Site Background

1.1 BACKGROUND

This Off-site Soil Sampling Plan (Sampling Plan) provides a scope of work to assess soil quality on the Torgesen Ranch and Richard Torgesen properties (Subject Properties), which were potentially impacted as a result of two (2) release events (described below) from the Nu-West Industries, Inc.'s (Nu-West) Conda Phosphate Operation (CPO) facility located in Soda Springs, Idaho. Specifically, this investigation focuses on two releases from the CPO facility: one from the Phase I Gyp Stack (F-GYP-1) in 2006 and another from the Old Gyp Stack (F-GYP-0) in 2009. Figure 1 shows the CPO facility and Subject Properties with areas affected by the 2006 and 2009 releases.

Impacted soils along the flow path of the 2006 release were removed during a previous response action by Enercon Services, Inc. (Enercon), a Nu-West consultant (Enercon, October, 2008). However, subsequent post-response soil sampling results from Torgeson's consultant, Bio-West, Inc. (Bio-West), suggest that soils in some portions of the 2006 release areas may contain residual concentrations of constituents of potential interest (Enercon, April, 2008).

Sampling also was conducted in the area of the 2009 release on the Subject Properties. No constituents of potential interest were detected at concentrations above the Target Remediation Goals (TRG) approved by the Idaho Department of Environmental Quality (IDEQ).

In accordance with the June 29, 2010 *Revised Sampling and Analysis Work Plan for Site Characterization* (Work Plan),¹ Nu-West proposes additional sampling to further evaluate soil quality in the areas of the 2006 and 2009 releases.

This Sampling Plan presents the proposed supplemental assessment activities for the Subject Properties. Specifically, the objective of this Sampling Plan is to further evaluate whether certain areas along the flow paths of the 2006 and 2009 gyp stack releases contain constituents of potential interest at concentrations above the screening criteria set forth in the Work Plan—*i.e.*, EPA Preliminary Remediation Goal (PRG) screening levels for residential soil or IDEQ's Risk Evaluation Manual (REM) Initial Default Target Levels (IDTLs) for commercial/industrial direct exposure and for the protection of groundwater and surface water.

This Sampling Plan is an addendum to the Work Plan, including the Quality Assurance Project Plan and Health and Safety Plan, and was prepared consistent with the sample plan design guidance presented in Chapter 9 of EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (also known as SW-846).

1.2 APPROACH

The objective of this Sampling Plan is to further evaluate soil quality along certain areas of the flow paths of the 2006 and 2009 gyp stack releases. The constituents of potential interest are based on previous analyses by prior consultants, and include those

¹ U.S. EPA approved the Work Plan on July 2, 2010.



identified in the Work Plan. Sample locations proposed for this Sampling Plan have been selected based on a review of prior analytical data (nearly 100 samples), and are particularly focused on areas of the Subject Properties where soils were not previously excavated and that may have been impacted by the 2006 and/or 2009 releases.

1.3 RELEASE AREA DESCRIPTION

The Subject Properties—situated in an area at the eastern limit of a broad, north-south trending valley that has been filled by lava flows—are residential and agricultural and currently in barley production. The valley floor is topographically flat with elevations ranging from approximately 6,135 to 6,150 feet above the National Geodetic Vertical Datum (NGVD). A large fault, which is visible as a topographic displacement, is located on the Subject Properties. Boring logs of wells located near this fault zone confirm that the bedrock is highly fractured and weathered.

The regional topography slopes gradually to the south, and the general geology of the region is comprised of alluvial deposits overlying basalt and sandstone bedrock. The surface of the Subject Properties is a thin veneer of unconsolidated alluvial overburden material consisting predominately of silt and silty clay.

The nearest naturally occurring surface water to the Subject Properties is Woodall Spring, which is located approximately one (1) mile northeast. Water flowing in Woodall Spring empties into Woodall Spring Ditch and enters the CPO facility on the north between the Phase I Gyp Stack (West Gyp Stack) and Tailings Pond #4, and exits the CPO facility just west of the Old Gyp Stack. Woodall Spring Ditch widens to the west of the CPO facility as it reaches the adjacent Torgesen Ranch property. In periods of wet weather, surface water flows in Woodall Spring Ditch and ponds on the Subject Properties beginning at the point where the ditch widens. This ponded water infiltrates into the subsurface beneath the Subject Properties.

Releases that resulted in overland flow of water from the CPO facility onto the Subject Properties occurred in 2006 and 2009. Additional details on these releases and subsequent response measures, along with the proposed supplemental sampling strategy to evaluate any residual constituents of potential interest, are described in more detail below.

The remainder of this Sampling Plan is organized as follows:

- Section 2: Summary of the 2006 release, actions undertaken to assess and mitigate any potential impacts, and sampling approach basis;
- Section 3: Summary of the 2009 release, actions undertaken to assess and mitigate any potential impacts, and sampling approach basis;
- Section 4: Proposed sampling data analysis.



2 2006 Release

2.1 2006 RELEASE BACKGROUND

On December 27, 2006, a release from the Phase I Gyp Stack located at the CPO facility occurred, following a dike failure. Water flowed into the decant ditch, subsequently overflowed its banks, and then flowed onto the Subject Properties in two locations where topographical depressions confined the process water. Figure 2 shows the two areas on the Subject Properties potentially impacted by the 2006 release; the larger area has been referred to as “Area A” and the smaller area as “Area B.” The water that accumulated on the Subject Properties quickly froze due to low temperatures. According to EPA records, by December 30, 2006, approximately 1.76 million gallons of water/ice were recovered and removed. Crushed limestone was placed in the spill footprint to neutralize any residual acidity. A survey was conducted to accurately delineate the extent of the affected areas for later reference (Figure 2).

2.1.1 Previous Nu-West Sampling Activities

In 2007 and 2008, on behalf of Nu-West, Enercon conducted soil sampling activities in Area A. A total of 12 soil samples were collected locations in Area A where water had accumulated and froze. A summary of the analytical results is provided in Appendix A. Based upon these sampling results, Enercon developed an ecological risk assessment for this area (*Ecological Risk Assessment, Nu-West Conda Facility, Soda Springs, ID* (Enercon, April 2008)), and an excavation plan (*Proposal for Performing Soil Removal Oversight and Confirmation Sampling* (Enercon, May 5, 2008)), which were submitted to and approved by IDEQ. The excavation plan specified removing soil from areas surrounding the five sample locations with elevated results and collecting verification samples to confirm that impacted soil had been sufficiently removed.

The initial excavation work was conducted on June 24, 2008 and involved removing one foot of soil around each of the five sample locations. A total of 34 verification soil samples were collected in conjunction with the excavation and analyzed for metals of interest. Based on the analytical results for these samples, a second phase of excavation was conducted on July 2, 2008 to address areas where metals concentrations remained elevated. Following the second excavation, 14 additional verification soil samples were collected, including four samples from outside the excavated areas. Based on the analytical results for the second soil sampling phase, a third excavation phase was conducted on July 10, 2008, followed by the collection of 12 further soil verification samples. Elevated metals were found in some of the verification samples, and a fourth excavation phase was performed on July 17, 2008. After the fourth excavation phase, three verification soil samples were collected on July 17, 2008. A summary of the verification sample results is provided in Appendix A.

These four excavation phases removed up to two feet of soil from the surface of the impacted areas (Figure 3). A total of 63 verification soil samples were collected after excavation events to confirm that the impacted soil had been adequately removed. Once the soil excavation was considered complete, the excavated areas were backfilled with clean topsoil.



2.1.2 Torgesen Sampling Activities

In June, July, and October 2008, on behalf of Torgesen Ranch, we understand that Bio-West collected eight soil samples from areas where water had previously accumulated. Seven soil samples were collected from Area A and one from Area B. The locations of the initial three samples collected by Bio-West from Area A were subsequently excavated by Enercon. The remaining five soil samples were collected after excavation activities were completed. The analytical results indicated that chromium, cadmium, selenium, and/or vanadium concentrations in three of the five post-excavation samples exceeded the TRGs.

Based on these data, and in accordance with the data quality assurance and data quality objectives established in the Work Plan, additional sampling is proposed to further evaluate soil quality in the areas on the Subject Properties potentially impacted by the 2006 release.

2.2 SOIL SAMPLING PLAN—2006 RELEASE

Additional soil sampling will be conducted on the Subject Properties in accordance with U.S. EPA guidance presented in SW-846² and ASTM D 4687-95³. As shown in Figure 4, sampling is proposed across the two release areas along a series of transects located approximately 275 feet apart. In Area A, the locations of transects were adjusted to exclude areas previously excavated in 2008. A total of ten transects are located in Area A and four in Area B. For each transect, samples will be collected as three-point composite samples, with one sample centered at the topographical low along each transect line and two additional samples collected approximately equally spaced from the topographical low along the transect out towards the lateral extent of the 2006 release area.

At each sampling location, samples will be collected from three depth intervals for a total of 126 discrete samples (14 transects, 3 locations per transect and 3 depths per transect):

- Shallow: Top 6 inches of native soil;
- Intermediate: 6-12 inches below ground surface (bgs)—to be held for analysis; and
- Deeper: 18-24 inches bgs.

The laboratory will be instructed to composite the shallow and deeper samples from each transect. The intermediate samples will be held by the laboratory until results from the shallow and deeper samples are evaluated. These intermediate samples will be analyzed, as necessary, to complete vertical delineation.

If crushed limestone or fill soil is encountered, which would suggest the area was previously excavated, the sample location will be adjusted to an alternative location within the segment based on field judgment. The actual sample locations will be recorded by field GPS survey.

² Chapter 9 of *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, U.S. EPA (also known as SW-846).

³ D 4687-95, *Standard Guide for General Planning of Waste Sampling*, ASTM International (2006)



The protocols for soil sample collection, field quality assurance/quality control samples, sample container requirements, sample packaging and shipping, and chain-of-custody procedures will be the same as those described in the Work Plan. Soil samples will be analyzed by Accutest Laboratories (Accutest) for the following parameters:

- antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, lead, magnesium, nickel, potassium, selenium, sodium, thallium, and vanadium by EPA SW-846 Method 6010B
- chromium by EPA SW-846 Method 7196
- fluoride by EPA SW-846 Method 9056A
- pH using EPA SW-846 Method 9045

These 28 composite samples (14 shallow and 14 deeper) are expected to provide representative concentrations of the constituents of potential interest in areas that were potentially affected by the 2006 release.



3 2009 Release

3.1 2009 RELEASE BACKGROUND

In April 2009, low pH water was released on the southwest side of the Old Gyp Stack (F-GYP-0), immediately north of the West Cooling Pond. The water entered the decant ditch and a portion of the water is believed to have overflowed onto property owned by Richard Torgesen, which is part of the Subject Properties. The area on the Subject Properties potentially affected by this release measured approximately 120 feet by 120 feet (Figure 5) with the majority of the water contained to an area measuring approximately 60 feet by 60 feet. To assess the potential impacts of the release, five surficial soil samples (2-4 inches bgs) were collected in the spill area and one sample was collected outside the spill area. Also, a sample of gypsum material that flowed into the area was collected for analysis. The samples were analyzed for phosphorus, pH, and metals. The analytical results indicated that chromium, cadmium, selenium, and vanadium concentrations were well below the TRGs (Appendix B). However, concentrations of chromium, cadmium, selenium, and vanadium and other constituents of potential interest were above the screening criteria established in the Work Plan. Based on these results, additional sampling is proposed to further evaluate soil quality in the 2009 release area on the Subject Properties.

3.2 SOIL SAMPLING PLAN—2009 RELEASE

To confirm the extent of the impacts, if any, on the portion of the Subject Properties potentially affected by the 2009 release, additional sampling will be conducted. The area covers approximately 14,000 square feet. A 3-point composite sample will be collected at the four locations shown in Figure 6. At each location, soil samples will be collected from three intervals for laboratory analysis (a total of 12 primary samples):

- Shallow: Top 6 inches of native soil;
- Intermediate: 6-12 inches bgs—to be held for analysis; and
- Deeper: 18-24 inches bgs.

The laboratory will be instructed to composite the shallow and deeper samples from each transect. The intermediate samples will be held by the laboratory until results from the shallow and deeper samples are evaluated. These intermediate samples will be analyzed as necessary to complete vertical delineation.

Soil samples will be analyzed by Accutest for the following parameters:

- antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, lead, magnesium, nickel, potassium, selenium, sodium, thallium, and vanadium by EPA SW-846 Method 6010B
- chromium by EPA SW-846 Method 7196
- fluoride by EPA SW-846 Method 9056A
- pH using EPA SW-846 Method 9045



These samples are expected to provide a representative sample set of the potentially impacted area.



4 Soil Sampling Protocols

This section describes the protocols for soil sample collection. Soil samples will be collected using direct-push (i.e., Geoprobe®) methods. Continuous soil cores will be taken from each location beginning at the ground surface and extending to 24 inches bgs. Samples will be collected for laboratory analysis from shallow (0-6 inches bgs), intermediate (6-12 inches bgs), and deeper intervals (18-24 inches bgs). The procedures for soil sampling using direct push equipment are specified in Standard Operating Procedure (SOP) #24 in Appendix C of the Quality Assurance Project Plan (QAPP) for the Work Plan.

4.1 FIELD QA/QC SAMPLES

Soil sampling will include the collection of blind field duplicates at a ratio of 1:10, and equipment blanks on a daily basis. These QA/QC samples will be collected in accordance with SOP #21 in Appendix C of the QAPP.

4.2 EQUIPMENT DECONTAMINATION

Decontamination of drilling or direct-push equipment will be performed between each boring location, and decontaminated sampling equipment will be used for the collection of each sample. Decontamination procedures are specified in SOPs #15 and #19 (Appendix C of the QAPP). Decontamination will include the use of a phosphate-free detergent, such as Liquinox®.

4.3 SAMPLE CONTAINER REQUIREMENTS

Soil samples will be placed in new laboratory-supplied, clean glass sample containers. Sample containers and preservatives will be as specified by the laboratory in accordance with SOP #2 in the QAPP. Each sample container will be labeled with a unique label description that will include the sample identification number, date and time of sample collection, analyses to be performed, sampler's initials, and the project name and number.

Following collection, each sample will be placed in a cooler and chilled to approximately 4 degrees Celsius. Samples will be packaged and shipped according to procedures described in Section 5.4, below.

4.4 SAMPLE PACKAGING AND SHIPPING

The lid of each sample jar will be securely tightened and samples placed in re-sealable plastic bags. Samples will be placed into a sample cooler or other appropriate shipping vessel and packed carefully to minimize the potential for breakage or spilling by using packing material (e.g., bubble wrap). Appropriate measures will be taken to ensure that glass sample containers will not touch each other inside the sample transportation container.

Ice in watertight re-sealable plastic bags will be placed on top of the samples and packing. If shipped by common carrier, the appropriate COC forms will accompany the



samples sealed in the shipping cooler in watertight packaging. The COC forms must be dry and legible upon receipt at the laboratory.

After packing, the containers must be sealed and managed in accordance with the COC requirements in Section 5.5. If being shipped by common carrier, an appropriate completed air bill or freight bill will be taped to the outside of the container.

4.5 CHAIN OF CUSTODY PROCEDURES

COC procedures consist of several levels of documentation, including the field logbook, the COC form, and custody seals. These documents serve as the record for tracking sample collection and transport. Once a sample is obtained, it must be maintained under COC procedures until it is in the custody of the analytical laboratory. The person collecting the sample is responsible for the custody of the sample until it is properly transferred or dispatched. WSP's standard COC forms or laboratory-supplied COC forms shall be used.

Field Log Book

The field logbook serves as official documentation of sampling activities. Field logbooks will be constructed of bound, sequentially numbered, water-resistant notepaper, and records will be kept in waterproof ink. Field personnel shall make frequent detailed entries to provide an adequate record of activities conducted during each day on site. SOP #1 provides additional details of required protocol for the field logbook.

Chain-of-Custody Form

A COC form will be filled out either simultaneously with the notations in the logbook or shortly after sample collection is completed for the day. The information required on the COC form includes the project name and number; sampler's name and signature; sample numbers; sample matrix; date and time of sample collection; quantity of sample containers; analyses required; and custody sequence.

If the samples are being shipped by common carrier, the COC form will include the carrier airbill number in lieu of a custody signature from a courier employee. In this event, the COC form will be packed in a cooler with the laboratory samples in a re-sealable plastic bag. One copy of the COC form will be retained by the sampler. The sender's copy of the air bill will be affixed to this copy of the COC form and will become a part of the COC documentation. The original COC form will remain with the samples during shipment. The receiving laboratory will be instructed to sign the COC form and return one copy with the analytical data package. The original COC form will remain with the samples until their ultimate disposal.

Custody Seals

To complete custody procedures for shipping, each sample cooler or container will be sealed with custody seals that are to be signed and dated by the shipper. The custody seal is a label with adhesive backing that is sealed over the container latch or across the closure point. If broken during transit, the sample custody has been compromised, which indicates potential tampering during transit. If unbroken, the integrity of the samples is assumed to be maintained.



5 Data Analysis and Reporting

The analytical results will be evaluated against data quality objectives established in the Work Plan. The analytical results will be compared to the more stringent of EPA PRG Screening levels for residential soil or IDEQ risk-based rules and IDTLs for commercial/industrial direct exposure and for the protection of groundwater and surface water. The results also will be evaluated as part of an overall assessment of conditions across the Site.

Laboratory results for the samples that are analyzed immediately will be reviewed to determine the required laboratory analyses (if any) for intermediate depth samples that are initially held pending data review. If the analytical results for deeper (18-24 inches bgs) samples indicate that concentrations of all constituents of potential interest are below the more stringent of the either EPA PRG screening levels for residential soil or IDTL value in the deepest sample analyzed, then the intermediate (6-12 inches bgs) samples from that boring will be analyzed for the parameters that exceeded those values in the shallower sample.

The results of the investigation will be summarized, including all data, in Geographic GIS for easy access and interpretation. The map depicting the sampling will be compiled into a report summarizing means, methods, and results. Soil sampling analytical results identifying the constituent concentrations will be included on a GIS map. Nu-West will evaluate whether these data are sufficient and whether additional soil sampling may be warranted.